Materials for discussion of regulatory classification of Rineco's
Thermal Metals Wash and Thermal Oxidizer Unit

Background question: Is Rinco's operation creating an environmental problem?

Regulations
40 CFR 260.10
Incinerator: means any enclosed device that:

(1) Uses controlled flame combustion and neither meets the criteria for classification as a boiler, sludge dryer, or carbon regeneration unit, nor is listed as an industrial furnace; or
(2) Meets the definition of infrared incinerator or plasma arc incinerator.

Infrared Incinerator: means any enclosed device that uses electric powered resistance heaters as a source of radiant heat followed by an afterburner using controlled flame combustion and which is not listed as an industrial furnace.

40 CFR 261.1(c)(7)
A material is recycled if it is used, reused, or reclaimed

40 CFR 261.1(c)(4)
A material is reclaimed if it is processed to recover a usable product , or it is regenerated.

Policy Statements, Regulatory Determinations, letters (attached)
September 30, 1991 [PCC 9488.1991(04)]
Lowrance to Davis (Reg VI)
Only plasma arc and infrared incinerators that utilize a controlled flame afterburner are regulated as incinerators (under subpart O).

November 15, 1994
Shapiro to Vickers (Reg III)
Rationale used to evaluate the applicability of RCRA subtitle C regulation to a fuming gasification unit w/ afterburner

March 10, 2000
Cotsworth to Termine (Molten Salt Oxidation)
Application of Subpart X to treatment process

June 12, 1998
Cotsworth/Luftig to Brugge
Thermal Desorbers not using controlled flame combustion (e.g., indirectly heated chamber with no afterburner) would be classified as misc units.

July 30, 1997
Cotsworth to Anderson (Reg IX)
Controlled flame combustion and catalytic thermal oxidation

Issues

Attachments

FAXBACK 13501
QUANTUM TECH PLASMA ARC UNIT - REGULATORY CLASSIFICATION
PPC 9488.1991(04)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SEP 30 1991

SUBJECT: Response to Region VI Inquiry on Regulatory Classification of Quantum Tech Plasma Arc Unit

FROM: Sylvia K. Lowrance, Director
Office of Solid Waste

TO: Allyn M. Davis, Director
Region VI Hazardous Waste Management Division

This memorandum is in response to your August 14, 1991, memorandum requesting guidance on whether the Quantum Tech plasma arc unit falls within the February 21, 1991, revised definition of incinerator, even though the unit has no afterburner.

The language of the February 21 revised definition of incinerator unintentially includes all plasma arc and infrared units, rather than just those with afterburners. However, the regulatory status of such devices does not immediately change in authorized States. Thus, at present, the state would make a determination on the regulatory classification of this device based on the definitions currently in effect in the state. To prevent problems in the future, we plan to make a technical correction to the revised definition of incinerator. Following is a more detailed description of our interpretation and planned follow-up.

Classification under Subpart 0 vs. Subpart X

On February 21, 1991, along with the BIF (boiler and industrial furnace) rule, EPA published modifications to the definition of incinerator. One modification specifically added plasma arc and infrared devices to the definition. The reasons for this modification were, as stated at 56 FR 7204, that "(1) although these devices use nonflame sources of thermal energy to treat waste in the primary chamber, they invariably employ controlled flame afterburners to combust hydrocarbons..." (emphasis added); and "(2) the incinerator standards are workable and protective for these units."

EPA was unaware at the time the definition was being developed, and commenters on the proposed rule did not indicate, that there were plasma arc units without afterburners, as indicated by the above preamble language. Therefore, the

presence of an afterburner was not specifically included as a criterion in the new definition. Under revised □260.10, plasma arc incinerator is defined as "any enclosed device using a high intensity electrical discharge or arc as a source of heat and which is not listed as an industrial furnace." Since there is no mention of afterburners in either the plasma arc incinerator or incinerator definitions, the revised definition of incinerator does not exclude plasma arc units which do not have afterburners. This is also the case for infrared units.

Since the Regions are now aware of two such devices without afterburners, we plan to make a technical correction to the February 21 rule to only include plasma arc and infrared units with afterburners in the definition of incinerator. Considering a plasma arc or infrared device without an afterburner as an incinerator is clearly not consistent with the intent of the regulation. In addition, the types of operating conditions and other performance requirements for incinerators may not make technical sense to apply to a non-combustion device. For example, carbon monoxide is a measure of combustion efficiency and therefore may not be a meaningful operating parameter for a non-combustion device.

Permitting these devices under Subpart X will allow more flexibility to address the specific operating and emissions characteristics of the units. Parts of Subpart 0 which do "fit" these devices can still be applied under Subpart X.

Rule Does Not Impact Authorized States Immediately

The revision to the incinerator definition is a non-HSWA rule and therefore does not take effect in an authorized state until the state becomes authorized for the rule change. Thus, assuming that plasma arc (and infrared) units have not been considered in the past to be incinerators under the authorized Texas program, they will continue to be outside the incinerator definition until Texas adopts the February 21 provisions. Our goal is to complete the technical correction well before authorized states adopt the new rule.

Recycling Exemption

You also requested clarification on whether the Quantum Tech unit may be an exempt recycling device. While incinerators (and boilers and industrial furnaces) cannot be considered exempt recycling units, other recycling devices can potentially be considered for the recycling exemption. Since plasma arc units would not presently be classified as incinerators in authorized states, Texas will need to make a determination on whether the Quantum Tech unit is a recycling unit. If Texas determines that the unit is not an exempt recycling device, then we agree that it would be subject to permitting under Subpart X for miscellaneous units. Attached is a memorandum which provides criteria for determining whether a unit is engaged in recycling. You may wish to provide this to Texas to assist them in this effort.

Summary

In summary, plasma arc (and infrared) units without afterburners were unintentionally included in the revised definition of incinerator. Our goal is to make a technical correction to the rule before this provision is adopted by authorized states. I n the meantime, the February 21 rule would not affect the regulatory status of these devices in authorized states, and Texas will need to determine whether the Quantum Tech unit is an exempt recycler.

We would like to remind you that if the facility has other units which will be receiving a RCRA permit, the plasma arc unit will be subject to the air emissions standards under Part 264, Subpart BB, even if it is determined to be a recycling device. It may also potentially be subject to the Phase II air emissions rule proposed on July 22, 1991, when this rule is promulgated.

We will keep you informed through the Incinerator and Subpart X Permit Writers' Workgroups of the progress on the technical correction. If your staff have any further questions, they may feel free to contact Sonya Sasseville at FTS 260-3132.

Attachment

cc: Devereaux Barnes
Elizabeth Cotsworth
Incinerator Permit Writers' Workgroup
Subpart X Permit Writers' Workgroup

FAXBACK 13714
9431.1994(02)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460
OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

APPLICABILITY OF RCRA REGULATIONS TO A PROPOSED FUMING/ GASIFICATION UNIT

November 15, 1994

MEMORANDUM

SUBJECT: Exide Corporation's Proposed Fuming/Gasification Unit

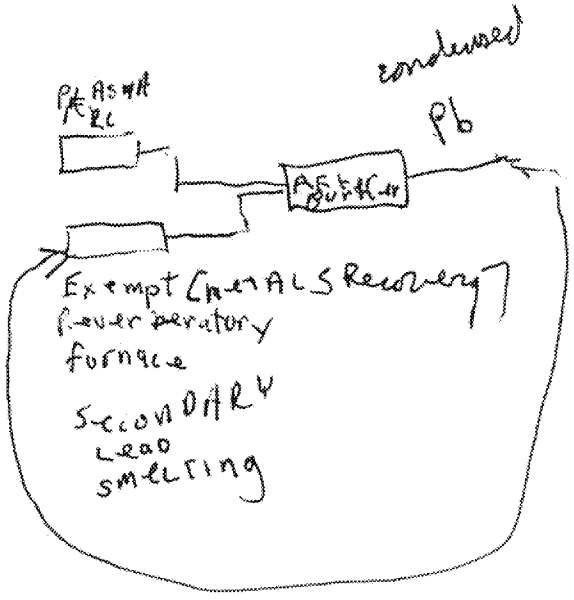
FROM: Michael, Shapiro, Director
Office of Solid Waste (5301)

TO: Marcia Parisi Vickers
Associate Division Director
Office of RCRA Programs, Region III (3HW03)

This is in response to your September 29, 1993, memo requesting a Headquarters' determination as to whether the RCRA regulations apply to a fuming/gasification unit that Exide Corporation proposes to build adjacent to its existing lead

smelting facility near Reading, Pennsylvania. In particular, you ask if the device would be subject to RCRA regulations, and, if so, would it be classified as an incinerator, industrial furnace, or miscellaneous treatment unit (i.e., Subpart X unit). Further, you asked, if the device is considered to be a Subpart X unit, how would the permitting priorities established under the Combustion Strategy relate to the Exide facility? The remainder of this memo provides some basic information that needs to be considered in making a decision and then provides our response to your questions.

Description of the Process. As we understand, the fuming/gasification device would use a plasma arc to process lead-contaminated soil and soil mixed with spent battery casings. Lead and organic compounds would be vaporized in the device and exhausted to the afterburner section of an existing reverberatory furnace. The reverberatory furnace and its afterburner is used for secondary lead smelting and would qualify for the metals recovery exemption under the Boiler and Industrial Furnace (BIF) rule. The afterburner would serve to destroy the organics in the exhaust from the plasma arc device and the lead would be captured (i.e., by condensation onto particulates and gas cleaning for particulate matter) and returned as feed to the reverberatory furnace for processing into salable product. The inorganic soil fractions that do not vaporize would be tapped off as slag.



Classification of Devices vs Process Trains. Given that the off-gas from the plasma arc device would be vented to an existing secondary lead smelter, previous guidance would require that we evaluate the classification of the new device -- that is, the fuming/gasification unit -- for determinations such as interim status eligibility, when applicable. For determining what regulatory standards and permit conditions should be applied, we would look at the process train in which the device would be incorporated (i.e., the plasma arc, secondary lead smelter, and afterburner). This guidance describes how the regulations apply to combustion devices at a facility where: (1) more than one device type (e.g., incinerator, industrial furnace, Subpart X unit) is connected in a process train: (2) the emissions from the connected devices emanate from a single stack; and (3) each device is separately burning or processing hazardous waste. [See my July 29, 1994, memorandum to Allyn Davis (copy attached).] *

As discussed in that memo, a case-by-case determination needs to be made to identify the standards, and permit conditions that should apply to the process train in its entirety. For purposes of making interim status determinations, the classification of the individual device must be determined separately. Since there is no issue with respect to the eligibility of the new device to qualify for interim status, that evaluation need not be made and is not discussed further in this memo.

Evaluation of the Process Train. The process train would be comprised of the existing reverberatory furnace with its afterburner and the new plasma arc device that is also connected

to the afterburner. The question is whether the new plasma arc device would affect the regulatory standards and permit conditions applicable to the process train. In this particular case, we believe the first step is to look at how we would classify the plasma arc/afterburner portion of the process train if it were a separate unit. If it would not be classified as an industrial furnace, we then need to determine what regulations are applicable to a process train comprised of an industrial furnace and some other device (i.e., the plasma arc/afterburner).

Given that the plasma arc device would be vented to an afterburner that uses controlled flame combustion, that portion of the process train would meet the definition of an incinerator, industrial furnace, or theoretically, a boiler, as those devices are defined in □260.10. Thus, this part of the process train would not be classified or regulated under Subpart X, Part 264, if it were a separate unit. Further, this portion of the process train would not be classified as a boiler because energy is not recovered and exported. Consequently, this portion of the process train would be classified as either an incinerator or industrial furnace depending on how it would be operated.

We have previously determined that a retorter is a type of pyrometallurgical device that meets the definition of smelting, melting, or refining furnace. See my December 17, 1993, memorandum to Joseph Franzmathes (copy attached). In the metallurgical industry, a retorter is a furnace consisting of a fire chamber in which metals are recovered by vaporization and subsequent condensation. The plasma arc/afterburner portion of the process train would meet the definition of a retorter if: (1) wastes or materials fed into the device contained economically recoverable levels of lead (see 56 FR 7143 (Feb. 21, 1991)); (2) Exide is in the business of producing lead for public sale, whether to an ultimate user or for further reprocessing or manufacture (see generally, □260.10 (definition of industrial furnace); see also EPA Region VI, Statement of Basis for Denial of Permit Application by Marine Shale Processors, Inc., Sept. 15, 1994, p. 6 (devices on enumerated list of industrial furnaces must still be operating as an integral component of a manufacturing process to be an industrial furnace)), and (3) significant levels of lead are recovered. If any of these criteria are not met, this portion of the process train would meet the definition of incinerator.

If it is determined that the plasma arc/afterburner portion of the process train would be an industrial furnace and if it were a separate unit, then the entire process train (i.e., including the secondary lead smelter) would be regulated as an industrial furnace. The emission standards and exemptions for industrial furnaces would apply. If the plasma arc/afterburner portion of the process train is determined to meet the definition of an incinerator, however, then the evaluation of what regulations would apply is more complex.

Would the Process Train Be Subject to RCRA Regulation? If the plasma arc/afterburner portion of the process train meets the

above criteria, then the entire process train would be classified as a smelting, melting, or refining industrial furnace. In this case, even though §260.10 defines a plasma arc incinerator as "any enclosed device using a high intensity electrical discharge or arc as a source of heat followed by an afterburner using controlled flame combustion and which is not listed as an industrial furnace," the plasma arc/afterburner portion of the process train would meet the definition of an industrial furnace. The process train would be conditionally exempt from the Boiler and Industrial Furnace (BIF) rule if it met the exemption criteria in §266.100(c) pertaining to levels of recoverable metals, heating value, and concentration of toxic organic compounds in the hazardous waste feed. Such exempt metals recovery facilities are not subject to RCRA permit requirements for combustion air emissions.

Example where controlled flame combustion is not regulated as incinerator but is exempt since it is defined as industrial furnace

If the plasma arc/afterburner portion of the process train does not meet the above criteria, the entire process train would be subject to the incinerator standards of Subpart O, Part 264. This is because the devices (e.g., reverberatory furnace and plasma arc device) share a common afterburner and stack and the plasma arc device is burning or processing hazardous waste. Given that the reverberatory furnace portion of the process train is conditionally exempt from the BIF rule, the incinerator standards would be the only applicable standards.

PLASMA ARC — controlled flame comb

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INCINERATOR

Permitting Priority for the Device. The permitting priorities of the draft Waste Minimization and Combustion Strategy, issued in May 1993, relate to Regional and State efforts to work on permit applications submitted by RCRA facilities that combust hazardous industrial process wastes. To the extent that a combustion facility handles only remediation wastes (under either RCRA or Superfund), the priorities under the draft Strategy are not applicable. In addition, in a memorandum of May 9, 1994, Assistant Administrator Elliott Laws clarified that the Agency's shift of RCRA permit priorities did not mean that incineration should not be considered in assessing Superfund remedies. For further information on Superfund issues, please contact John Smith, Chief, Design and Construction Management Branch, Hazardous Site Control Division, at (703) 603-8830.

I hope that this information will be helpful. If your staff have questions or would like to further discuss the issues, they may contact Mr. H. Scott Rauenzahn at 703-308-8477.

Attachments (2)
cc: M. Straus
S. Silverman
S. Sasseville
P. Borst
B. Holloway
S. Rauenzahn

March 10, 2000

Frank Termine
Molten Salt Oxidation Corporation
33 Bonair Drive
Warminster, PA 18974

Dear Mr. Termine:

This letter is in response to your September 22, 1999 letter regarding the permitting of your molten salt oxidation (MSO) process to treat hazardous waste under the Resource Conservation and Recovery Act (RCRA). You asked various permitting questions which appear below, along with our responses. However, please note that the final decisions regarding the permitting of your unit should be made by the appropriate permitting authority (i.e., the region or state where you apply for a RCRA permit).

You asked:

1) Assume we feed 1,000,000 lb/yr of a completely organic hazardous waste to the unit.

a) Would the unit be permitted under Subpart X? The case as presented in the attached paper appears pretty compelling.

Answer: The decision on how to permit your unit (i.e., subpart X -vs- subpart O) would be made by the appropriate permitting authority. As presented, we believe your unit would be permitted under the 40 CFR part 264 subpart X regulations. There appears to be no flame combustion occurring within the process.

b) What performance standards should we expect?

2

Answer: The regulations under subpart X do not refer to specific technical standards, as do other hazardous waste management units, but specify Aenvironmental performance standards@ under which units must be operated to be protective of human health and the environment (see 40 CFR 264.601). Subpart X permits Aare to contain such terms and provisions as necessary to protect human health and the environment.@ The regulations direct the permitting agency to look at the requirements (e.g., performance standards, operating parameters, monitoring requirements, etc.) from other sections in the regulations when developing appropriate permit conditions for miscellaneous units.

Section 264.601 was recently modified (see 64 FR 52993, September 30, 1999) to include a reference to the new part 63 subpart EEE standards (NESHAPS: Final Standards for Hazardous Waste Air Pollutants for Hazardous Waste Combustors; Final Rule; September 30, 1999; 64 FR 52828 (HWC MACT Rule)). The section now states that permit terms and provisions Amust include those requirements of subparts I through O and subparts AA through CC of this part, part 270, part 63 subpart EEE, and part 146 of this chapter that are appropriate for the miscellaneous unit being permitted.@ We expect that the permit writer would look to the part 63 subpart EEE standards for new incinerators in setting standards for your unit.

c) What specific air emissions standards would we have to meet? In terms of lb/hr, tons/yr, ppm, or whatever.

Answer: Again, the final decision on what emissions standards would apply to your unit would be made by the appropriate permitting authority. We expect that the permit writer would look to the part 63 subpart EEE standards for new incinerators in setting standards for your unit. Those standards are found at 40 CFR 63.1203(b) (see 64 FR 53040, September 30, 1999). They are:

Dioxin/Furan ..... 0.20 ng TEQ/dscm
Mercury ..... 45 μg/dscm
Particulate Matter ..... 34 mg/dscm (0.015 gr/dscf)

Semivolatile Metals ..... 24 µg/dscm
(lead and cadmium)
Low Volatile Metals ..... 97 µg/dscm
(arsenic, beryllium, and chromium)
Hydrochloric Acid/Chlorine Gas 21ppmv
Hydrocarbons ..... 10 ppmv (or 100 ppmv carbon monoxide)
3
Destruction and Removal Efficiency ..... 99.99% for each specific principal organic hazardous constituent, except
99.9999% for specified dioxin-listed
wastes.

d) Would the spent salt be considered hazardous or not? If the spent salt is considered hazardous, what regulation is making it that? How would we have to dispose of it?

Answer: The spent salt may be considered hazardous waste. Section 261.3(c)(2) states that any residue generated from the treatment, storage, or disposal of hazardous wastes is a hazardous waste. All residues that are generated are considered to be derived-from the original hazardous waste that was treated. However, if the original waste treated was only a characteristic waste, the spent salt would not be considered a hazardous waste if it does not exhibit a characteristic (see 40 CFR 261.3(d)).

If the original waste treated was a listed waste, the spent salt would also be considered a listed waste. The spent salt would carry the same waste codes and would need to meet the appropriate land disposal restriction (LDR) standards prior to land disposal.

e) Are there any other permitting issues that we need to be concerned with?

Answer: Yes. Your permitting authority may require that a risk assessment be completed in order to assure that the applied standards are fully protective of human health and the environment. Subpart X specifies that the permittee must examine the potential for health risks caused by human exposure to waste constituents (see '264.601(a)(8), (b)(10), and (c)(6)). Furthermore, '270.23 (Specific part B information requirements for miscellaneous units) states that Ainformation on the potential pathways of exposure of humans or environmental receptors to hazardous waste ...@ be provided (see '270.23(c)). The decision as to whether or not a risk assessment will be required will be made on a site-specific basis by the permitting authority.

2) Suppose the waste stream in #1 contained some chlorinated hydrocarbons. Does that change any of the answers in #1 a-e?

Answer: No. We believe the answers would not change.

3) Suppose the waste stream in #1 contained some heavy metals.

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a) Which heavy metals are of a concern to permit writers?

Answer: The short answer is all of them, since metals are not destroyed by treatment. A permit writer should consider which metals are in the waste streams and set appropriate limits to control stack emissions. For additional discussions on metals and metal emissions see AGuidance on Collection of Emissions Data to Support Site-Specific Risk Assessments at Hazardous Waste Combustion Facilities, Peer Review Draft; August 1998; EPA530-D-98-002" and the preamble to the HWC MACT rule (64 FR 52845, September 30, 1999).

b) How does that change any of the answers in #1 a-e?

Answer: We believe the answers would not change.

4) Suppose the waste stream in #1 contained some PCBs. How does that change any of the answers in #1 a-e?

Answer: Polychlorinated biphenyls (PCBs) are regulated under the Toxic Substances Control Act (TSCA). If your waste stream contains PCBs above

regulatory levels, your unit would need both a Resource Conservation and Recovery Act (RCRA) permit and TSCA permit in order to operate. The TSCA regulations are found in 40 CFR part 761. For more information on specific TSCA requirements, please contact the appropriate permitting authority, or you can contact Dody Dodahara in the Environmental Protection Agency=s (EPA=s) Office of Pollution Prevention and Toxics at (202) 260-3959.

5) Suppose the waste stream in #1 contained some low level radioactive materials and is now considered LLMW. How does that change any of the answers in #1 ae?

Answer: Mixed waste (waste that is both radioactive and is a RCRA hazardous waste) is dually regulated in most states by both the EPA and the Nuclear Regulatory Commission (NRC). In addition to meeting all RCRA requirements, you would need to meet NRC requirements imposed by your license for managing this waste.

Thank you for the opportunity to respond to your questions. If you have any further questions, please contact Andrew O=Palko of my staff at (703) 308-8646.

Sincerely,

5

signed by Matt Hale for
Elizabeth A. Cotsworth, Director
Office of Solid Waste

RO 14266

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

Mr. Parker E. Brugge
Patton Boggs, L.L.P.
2550 M Street, N. W.
Washington, D.C. 20037-1350

Dear Mr. Brugge:

This letter is in response to your April 7, 1998, letter seeking clarification on the distinction between thermal desorbers and incinerators. Under the U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 260.10), thermal treatment units that are enclosed devices using controlled flame combustion, and that are neither boilers nor industrial furnaces, are classified as incinerators subject to regulation under 40 CFR Part 264, Subpart 0. Thermal treatment units that do not use controlled flame combustion, and that are neither boilers nor industrial furnaces, are classified as "miscellaneous units" subject to regulation under 40 CFR Part 264, Subpart X.

EPA regulations do not define "thermal desorber", but the term generally applies to a unit that treats waste thermally to extract the contaminants from the matrix. A thermal desorber utilizing controlled flame combustion (e.g., equipped with a directly fired desorption chamber and/or a fired afterburner to destroy organics) would meet the regulatory definition of an incinerator. On the other hand, a thermal desorber that did not use controlled flame combustion (e.g., equipped with an indirectly heated desorption chamber and the desorbed organics were not "controlled"/destroyed with an afterburner) would be classified as a "miscellaneous unit".

With regard to the September 1993 Presumptive Remedy guidance entitled: `Presumptive Remedies: Site Characterization and Technology Selection for CERCLA Sites with Volatile Organic Compounds in Soils" (Directive Number 9355.0-48FS) that you mentioned, EPA identified thermal &sorption and incineration as the second and third preferred technologies, respectively. The intent of the guidance is that units that can be generally described as thermal desorbers, whether or not they are also

incinerators, are second in the preference list. However, if a thermal desorber that meets the RCRA definition of incinerator is used to treat hazardous waste at a CERCLA site, the unit must meet RCRA's incinerator standards. EPA developed the preferential order set out in this guidance based on historical patterns of remedy selection and EPA's
RO 14266
scientific and engineering evaluation of performance data on technology implementation. There was no intent implied or stated in the Presumptive Remedy guidance that the preferential order was based on the temperature of operation; the guidance does not limit the thermal desorbers technologies to those that are low-temperature thermal desorbers.

We appreciate that as technologies evolve, the distinctions between units often become blurred, and, in the case of thermal desorbers, may fail within two separate classifications depending on the design of the unit. Classification of a "thermal treatment" unit, however, is defined by 40 CFR 260.10.

Both the RCRA regulatory framework and the CERCLA remedy selection process provide adequate flexibility to ensure that the unit is operated in a protective manner and that there is adequate and informed public participation. If you have any further questions, please contact either Andrew O'Palko, Office of Solid Waste, at (703) 308-8646 or Robin Anderson, Office of Emergency and Remedial Response, at (703) 603-8747.

Sincerely, Sincerely,
Elizabeth Cotsworth Stephen D. Luftig
Acting Director Director
Office of Solid Waste Office of Emergency and
Remedial Response
cc: Andrew O'Palko, OSW
Bob Holloway, OSW
Robin Anderson, OERR
Karen Kraus, OGC
Superfund Regional Response Managers
RCRA Senior Policy Advisors
RO 14266
PATTON BOGGS, L.L.P.
2550 M STREET, N.W.
WASHINGTON, D.C. 20037-1350
(202) 457-6000 (202) 457-5225
April 2, 1998
Ms. Elizabeth A. Cotsworth
Acting Director
Office of Solid Waste
U.S. Environmental Protection Agency
401 M Street, S.W. (5301W)
Washington, D.C. 20460
Dear Ms. Cotsworth:

I am writing to seek clarification on the distinction between thermal desorbers and incinerators.

It is my understanding that thermal treatment units which are enclosed devices using controlled flame combustion, and that are neither boilers nor industrial furnaces, are classified as incinerators subject to regulation under 40 CFR Part 264, Subpart O. It is also my understanding that thermal treatment units which do not use controlled flame combustion, and that are not industrial furnaces, are classified as "miscellaneous units" subject to regulation under 40 CFR Part 264, Subpart X.

Thus, a thermal desorber is subject to regulation as an incinerator if it is equipped with a fired afterburner, or if the desorption chamber is directly fired. However, I would assume that, although such a device is subject to regulation under Subpart O, it nevertheless remains a "thermal desorber." The fact that it must meet the standards set forth in Subpart O for

incinerators does not transform it somehow into an incinerator for CERCLA purposes. For example, EPA issued guidance in September 1993 explaining that at a Superfund site which has soil contaminated with volatile organic compounds, the range of remedial technologies set forth in a Record of Decision may be soil-vapor extraction ("SVE"), low-temperature thermal desorption ("LTTD"), and incineration. The preferred order is SVE, LTTD, and, as a last resort, incineration. A thermal desorber with a fired afterburner, or one whose desorption chamber is directly fired, must fall within the "thermal desorption" family of technologies, even though it would be subject to regulation under Subpart O as an incinerator. To hold otherwise would disqualify the large majority of LTTD units, which are directly fired and use afterburners for air pollution control. This result would be contrary to EPA's CERCLA guidance and to the Administrator's emphasis on reducing incineration which involves the high-temperature burning of contaminated soil.

There appears to be some confusion on this issue, for which we would appreciate your help in clarifying. Please call me if you have any questions or if you would like to discuss this issue further.

Sincerely,
Parker E. Brugge
cc: Bob Holloway

RO 14238

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM:
SUBJECT: Response to Questions from California Department of Toxic Substances Control Regarding Various Issues on the Combustion of
FROM: Elizabeth A. Cotsworth, Acting Director
Hazardous Waste
Office of Solid Waste
TO: Julie Anderson, Director
Waste Management Division, Region IX

On July 24, 1995, the State of California sent a letter to EPA, Region IX requesting, answers to the questions listed below. Region IX then forwarded the California letter to us for response. The questions were subsequently discussed during various conference calls with the Waste Combustion Permit Writers: Workgroup. Based on these discussions and others within OSW, we have prepared the following responses. However, I would like to point out that the view of this Office is that, in most cases, the literal line between incineration and non-incineration is not the main concern. Rather, the primary concern from an environmental standpoint is whether proper controls are applied to the combustion or thermal treatment process in question. The RCRA regulatory framework provides the authority and responsibility to impose adequate controls whether the unit is classified as a combustor or miscellaneous unit. If you have any further questions or comments on these issues, feel free to contact Andrew O'Palko of my staff at (703) 308-8646.

1. Can you clarify the meaning of "controlled flame combustion," as specified in the incineration definition? Does this imply that an engineered burner must be utilized to generate "controlled flame ?" We presume that an engineered burner is necessary for "flame combustion" to be considered "controlled," but would like confirmation.

Answer: Combustion is an exothermic chemical reaction involving the rapid thermal oxidation of a substance. Controlled flame combustion refers to a steady-stare, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. An engineered burner is not necessarily needed in order for a combustion process to be considered controlled. EPA does not specify the term "engineered burner" in the regulatory definition for incineration devices. EPA notes there is not always a clear distinction whether a particular process meets the definition of an incinerator. Some processes need to be evaluated on a sire-specific basis. Again, the important consideration is that appropriate controls be applied to the unit.

2. Does EPA consider fluidized bed hazardous waste oxidizers to be incinerators? In these devices, the bed material (sand) is preheated via a burner device prior to the introduction of waste. Subsequently charged waste is then oxidized in the bed after the burner has been disengaged. Does this constitute a controlled flame system? Does the physical state of the waste feed affect the classification of the unit (solids versus liquids versus gases)?

Answer: Yes, EPA considers fluidized bed devices to be incinerators and regulated under 40 CFR 264 (and 265) Subpart O (see 55 FR 17870, April 27. 1990). These devices are considered a specialized form of controlled flame combustion in which the flame is dispersed throughout a fluidized bed. That is. fuel and oxidizer feed rates are properly controlled so that combustion (i.e., rapid thermal oxidation) will occur throughout the bed. The physical state of the waste feed would not affect the classification of fluidized bed devices as incinerators.

3. U.S. EPA has stated that catalytic converters are distinct from controlled flame afterburners (57 FR 38562). Can you clarify how such converters differ from controlled flame afterburners? Catalytic converter units are able to oxidize wastes at temperatures lower than that necessary for a typical flame unit due to the catalyst's ability to lower the energy necessary for the oxidation reaction to occur. What are the criteria for distinguishing one from the other?

Answer: As stated in the question, a true catalytic converter is able to oxidize wastes at temperatures lower than necessary for a typical flame unit. In addition, the catalytic oxidation reaction is generally thought to take place at a much slower heat release rate than normal combustion. Such a unit would generally not be considered a controlled flame combustion device and, therefore, would be regulated as a miscellaneous unit under Subpart X (§264.600). One factor that indicates whether the device is regulated under Subpart O or X is whether rapid oxidation (i.e., combustion) would cease without the presence of the catalyst. If the reaction ceases without the catalyst, then it would be a Subpart X unit. In contrast, the use of a catalyst only to enhance traditional combustion would not allow a classification as Subpart X.

4. If a premixed, gaseous waste is processed in a device which uses a preheated chamber at which the system is operated outside the limits of flammability, would this imply that a controlled flame is nor employed. and therefore it is nor considered incineration? We presume this to be the case but would like confirmation.

Answer: Controlled flame combustion is the defining character of incineration. If the system discussed operates outside the limits of flammability, such that a flame is never formed, it is reasonable to conclude that it is not an incinerator.

5. If a waste processing system produces a gas with commercial value, what restrictions, if any, apply to the disposition of that material? For example, if a molten bath processing system produces a synthesis gas, that gas could:

a) Be used as a feedstock for a chemical manufacturing process;

b) Be burned for its fuel value; or

c) Be flared.

Would any of these examples cause the process to be deemed incineration? We presume that they would not cause the whole process to be considered incineration, but would like confirmation. If the synthesis gas meets commercial product

specifications, is it free from subsequent hazardous waste regulations?
Answer: These issues are difficult to address generically since often the specific operations at a particular site bear heavily on the final conclusions that are reached. Historically, these types of issues have been handled on a case-by-case basis. However, please be aware that it is the process, not the product, which determines a unit's classification. Also, if a syngas is hazardous waste derived, it is subject to regulation if used as a fuel (see 62 FR 24253, May 2, 1997). There are four policy memoranda (attached) which can be used for assistance. These are: 1) Clarification Regarding Single Emission Point, Multi-Device Combustion Facilities, July 29, 1994 from Michael Shapiro; 2) Exide Corporation's Proposed Fuming/Gasification Unit, November 15, 1994 from Michael Shapiro; 3) Application of the BIF Rule to Heritage Environmental Services, December 30, 1992 from Sylvia Lowrance; and 4) an April 12, 1996 letter from Mike Shapiro to Molten Metal Technology with respect to synthesis gas from Catalytic Extraction Processing.
In addition, the new MACT rule proposed a comparable fuels exemption for hazardous waste, which includes a syngas exemption based on a set of specifications for the gas (see 61 FR 17465, April 19, 1996, and 62 FR 24253, May 2, 1997). Syngas meeting these specifications could be burned as a fuel without triggering RCRA obligations. If and when this exemption is implemented, it will, hopefully, minimize the need for these site-specific determinations.
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RO 14238
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Attachments (4)